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THE JOURNAL OF PHILOSOPHY

THE DAWN OF VALUE THEORY

THE most evident feature of current value theory is conflict and confusion. Even the same philosophic households are divided against themselves. A hardy soul may see therein much promise and some agreements, but the situation is not unlike that in the earlier modern period when the nature of knowledge was the central issue. In dealing with that problem, as in dealing with the nature of value, widely different viewpoints appeared (empiricism versus rationalism and intuitionism, realism versus idealism, etc.), with chief emphasis upon analysis of the psychological content or nature of "the understanding." Similarly, discussion of values has centered for the most part on the origin and psychological processes involved in "valuing," "preferring," or "the value judgment." Such analysis is important if valuation is to be clearly understood. But much as the opposing emphases in regard to knowledge were later found to be but facets of the methodology by which knowledge is now generally admitted to be achieved, so it appears that a new approach is slowly rising which will be recognized as incorporating and transcending the partial truths emphasized in previous value theories.

The new approach which oriented, synthesized, and went beyond the partial truths of early knowledge theories came largely as a result of the development and application of science, pure and commercial. The social fact made possible a reformulation of theory and the general acceptance of that theory. At present the chief hindrance to fuller recognition of the possibility of a more adequate theory of values and valuation, apart from their intricate complexity and intangibility, lies in the fact that socially we have scarcely begun to formulate human ends and means carefully and systematically. Only in scattered instances and limited extensions have men consciously conceived ends and means as hypotheses whose effects in reflective and overt action are to be taken as data for revision and further construction. Social-lag retards theory, and theory-lag impedes social advance.

If we shut our eyes to many bedeviling and retrogressive tendencies both at home and abroad and center attention on the more promising advances in social practice and discussion, we may dimly

discern the main outlines of a dawning value theory. These may be sketched briefly under five points.[1]

The first and cardinal principle is, however stated, that values are verified goods. Goods may be recognized as being, or having expression in, "any interest in any object" or "any object of any interest," that is, in the responses of sentient creatures toward and away from things and conditions, external and internal. It will be apparent that these responses are not merely subjective and arbitrary, they are responses *to* and *from* actual physical, social, and psychological events whose structure and interconnections in total situations constitute the objective basis or existence of values. Yet despite this objective basis, values no more than facts lie about like polished pearls to be casually picked up or directly observed. What is most probably valuable, as well as what is most probably

[1] The problems and much of the materials assimilated into the discussion which follows have derived from such sources as: R. C. Baldwin, "Teleology and the Idea of Value," this JOURNAL, Vol. XXXIII (1936), pp. 113–124; C. L. Barrett, "Introduction," in *Contemporary Idealism in America*, II (edited by C. L. Barrett); *Philosophy*, pp. 310–320, and "In What Sense are Values Objective?", this JOURNAL, Vol. XXXIII (1936), pp. 373–382; P. A. Bertocci, "The Authority of Ethical Ideals," this JOURNAL, Vol. XXXIII (1936), pp. 269–274; L. P. Chambers, "Plato's Objective Standard of Value," this JOURNAL, Vol. XXXIII (1936), pp. 596–605; J. Dewey, *The Quest for Certainty*, Ch. X; J. Dewey and J. H. Tufts, *Ethics*, revised edition, Part II; R. E. Fitch, "The Two Methods of Ethics," this JOURNAL, Vol. XXXIII (1936), pp. 319–324; C. J. Herrick, "Is Truth a Value?" this JOURNAL, Vol. XXXIII (1936), pp. 169–175; F. H. Knight, "Social Science and Social Action," *Inter. Jour. of Ethics*, Vol. XLV (1935), pp. 1–33, and "Pragmatism and Social Action," *Ibid.*, pp. 229–236; K. Koffka, "The Ontological Status of Value," in *American Philosophy Today and Tomorrow* (edited by S. Hook and H. M. Kallen), pp. 275–312; J. Mayer, "Comparative Value and Human Behavior," *Philosophical Review*, Vol. XLV (1936), pp. 473–496; B. W. Means, "Freedom, Indeterminancy, and Value," this JOURNAL, Vol. XXXIII (1936), pp. 85–95; M. H. Moore, "Truth and the Interest Theory of Value," this JOURNAL, Vol. XXXII (1935), pp. 545–551; D. H. Parker, *Human Values*; R. B. Perry, *General Theory of Value*, and articles in *Inter. Jour. of Ethics*, Vol. XLI (1931), pp. 429–442, in this JOURNAL, Vol. XXVIII (1931), pp. 449–460, 477–484, 519–526, and in *Philosophical Review*, Vol. XLI (1932), pp. 337–350; a "Symposium on R. B. Perry's General Theory of Value," *Inter. Jour. of Ethics*, Vol. XL (1930), pp. 465–495 (by D. H. Parker, H. H. Dubs, and Charner M. Perry); R. B. Raup, "Limitations of the Scientific Method," *Teachers College Record*, Vol. XXX (1928), pp. 212–226; R. Rothman, "Value and Intelligence," this JOURNAL, Vol. XXXIII (1936), pp. 169–175; W. M. Urban, "The Philosophy of Spirit" in *Contemporary Idealism in America*, VI (edited by C. L. Barrett), and "Value Theory and Aesthetics" in *Philosophy Today* (edited by E. L. Schaub), pp. 54–75; and P. Wheelwright, *A Critical Introduction to Ethics*, especially p. 51. The first cited work by R. B. Perry and the last by Urban give references to important earlier value literature.

true, can be ascertained only through verification, i.e., through the performance of operations of inquiry and testing. These operations occur in respect to all values, as they do in science and in art, through the organically interdependent processes of social discussion, individual reflective thinking, and interaction in existential events.

In matters of fact it is now generally recognized that not all data of consciousness, not all awarenesses and all suggested formulations, are knowledge in the most distinctive sense of the term. Only in the degree that hypotheses are verified are they recognized as knowledge or truth. Similarly, there is now a less universal but growing agreement that artistic creation is an experimental process which proceeds by observation, by careful reflective thinking, and by performing and responding to the effects of more overt operations; also that an act or work of art is artistic or truly beautiful in the degree that it is expressive for the artist or appreciator both at the moment and for continuing enrichment, particularly in the perceptual and feeling dimensions of experience.[2] Not all impulses, not all expressions of emotion and meaning are equally artistic or expressive; suitable embodiment is reflectively achieved or approved. Only in the degree that suggested expressions stand the test of repeated critical examination (including both "intellectual" and "feeling" responses) may they be regarded as most deeply artistic or expressive.

Likewise, careful consideration of the processes through which the goods of ordinary personal and social life arise and are gradually transformed into recognized values (positive or negative) leads, for "moral" values and for values generally as well as for the values of truth and of beauty, to this conclusion: not all goods (desires, impulses, interests, or satisfactions) are values; values are relatively verified goods (and evils). Or if it be preferred, the usage of words may be reversed. Then we should say conversely; not all values (attractions and aversions) are goods or evils; goods and evils are relatively verified values. Although the value situation would be immensely clarified by a general agreement on usage or terms, this is strictly a personal matter so long as we do not neglect or deny (consciously or unconsciously) these central facts: that impulses, desires, or interests are not merely intrinsic but also instrumental to further physiological, psychological, and social effects; that the

[2] Cf., for instance, E. F. Carritt, *The Theory of Beauty*, fourth edition, pp. 215–217, 287–295; J. Dewey, *Art as Experience*, Chs. IV, V, and pp. 167–169; Malvina Hoffman, *Heads and Tales*, Ch. II, esp. pp. 43–44; D. H. Parker, *Principles of Aesthetics*, Chs. IV, V, VII; M. Schoen, *Art and Beauty*, Chs. III, IV, V.

worth or quality of impulses is to be considered (i.e., "verified") also in terms of these effects; and that such consideration occurs, well or ill, through the organically interrelated and recurrent processes of discussion, individual thinking, and interaction in existential events. These facts are expressed in the present discussion by saying that values are verified goods.

From the foregoing it will be evident, in the second place, that values are both subjective and objective, in the same way and perhaps in much the same degree as are facts. But more crucially it follows that the degree in which any supposed good is a value, or is merely subjective, corresponding to no genuine external connections nor internal needs or possibilities, is something to be discovered —discovered through "experimental" operations. Values, like facts, can perhaps never get beyond the hypothetical stage; but in so far as they are products both of free, open expression of interests and of careful inquiry into and testing of effects, they may be properly employed, with courage and caution, as formulating correctly or adequately the salient features of our world and ourselves. In a certain sense all facts and all values are products of creative imagination. But in another sense it is equally true that facts and values are never merely fictitious. They are also discoveries. Inquiry and testing uncover objective conditions of growth and of human interdependencies (social and physical). These conditions or interconnections are what make it possible intelligently to prize some and avoid other interests and procedures. Yet it must become more apparent that the existent provides the materials with which to conceive and actualize novel and possibly better conditions. What may at first appear to many as purely subjective becomes objective through the arts of intelligent action, or proves itself to be totally or in some degree subjective.

In the third place, the nature and rôle of the various psychological processes involved in valuing and valuation are clarified when values are conceived as verified goods. As individuals and groups seek adjustment and expression in their on-going, novelty-pervaded existence, they give attention to situations which arise, use funded experience, perform various overt and non-overt operations. These operations have qualities or elements which may be abstracted out and labeled as perception, feeling, desire, cognition, intelligence, emotion, conation, affection, mental, motor, interest, attraction, aversion, etc. But when these so-called processes are examined in their context and fullness, it becomes apparent that they are elements or qualities which have an isolated existence only for abstraction. In any situation in which matters of fact or of value are dealt with, most of these elements or qualities of behavior

and experience—probably all of them—are present. While there is need for utmost clarity and detail in analysis of the psychological events which occur when we concern ourselves with various "kinds" of matters (e.g., scientific, artistic, personal, social, political, religious, etc.), the hope that the true nature of fact or of value, of fact-finding or of valuation, may be found in analysis of psychological events isolated from total operations of inquiry and verification in their physical, social, and psychological context, will certainly fade. More and better analyses should be and probably will be made, but "separate" processes need to be treated as integral to larger settings.[3]

In a sense all values are facts and all facts values. Values might be regarded as the whole gamut of events viewed as interests, or in terms of their worth for interests or effects, and facts as the same events viewed in terms of their nature and relations as events. But conceived in their most distinctive meaning, values are verified attractions and aversions in respect to human ends and means; facts are verified attractions and aversions in the perception or surmise of actual conditions and relations (internal as well as external, meaning events as well as physical and biological events). It is of course permissible, at least for convenience, to distinguish different orders or kinds of events and consequently different kinds both of facts and values. But facts and values are certainly not to be conceived as separate realms, whether due to the existence of different kinds of meanings, due to alleged differences in methods of verification, or due to basic differences in psychological processes which are frequently said to exist between valuing and fact-finding. Although important relative differences do exist and need to be adequately recognized, the sharp gulfs and dualisms which have often been erected between science and morals, between theoretical and practical knowledge, between perceiving and preferring, between valuing and judgments of or about values, will be dissolved and recognized as untenable. The dawning approach makes it possible, in matters of value as in matters of fact, to recognize the partial truths both of empiricism and of rationalism. But it places more emphasis on the rôle of constructive intelligence than is the usual wont of empiricism, and also makes less convincing the claims for rationally or intuitively self-evident goods or duties.

A fourth point. The view that values are created or discovered through verification gives full recognition to the fact that there are distinctions made and to be made among qualities of goods. Indeed such discrimination is central to the conception of value as well as to valuation. Values like facts are artistic products of intelligent

[3] For an interesting brief analysis of valuation thus, see Joseph Mayer, *op. cit.*, pp. 490–494.

effort. Those ends and means resulting from free interplay of desires and preferences whose interconnections and effects are carefully and sympathetically considered and chosen are generally higher, superior, or more valuable, as well as more secure, than those which operate as blind impulse whether "selfish" or "altruistic." Not that any impulses or desires are inherently inferior or superior, but that they become most crucially moral or immoral, true or false, valuable or injurious (or neutral) from their consequences for personal and social welfare, rather than solely from the immediate satisfactions which they are or afford. And unless reflective adjustment is to cease, values must be in some degree ever in the making, though for individuals and perhaps for widening groups some value formulations will become increasingly verified.

It is of course necessary to go beyond laudation of the experimental method to the further use of that method in formulation of values which are best verified in the light of human history as well as to propose general directions and specific steps for current action. Such criteria or concepts as growth, general welfare, inclusiveness, preference, intensity, and qualitative uniqueness and wholeness may be helpful by calling attention to features of situations which otherwise might be less constantly taken into account. But they have their objective origin and significance from enjoyments and other consequences. They are instruments formulated in and having import for human adjustment and expansion, rather than being fixed modes inherent in values conceived as entities possessing independent existance or subsistence. Properly viewed they operate as useful signals, warnings, and guideposts; they do not become mysterious entities, forms, or realms which are then assumed to be subject-matter for special, isolated investigation.

Unless the world moves in a finite number of patterns of occurrence, and unless the number and kind of human adjustments which can and will be made are finite, we may scarcely hope to delineate more than the main principles with which we face our situations and make choices and plans. In the world as it perhaps is, it may be necessary (we will all certainly hope it is) to make the best use we can of such funded information as constitutes history, sociology, mental hygiene, medicine, et cetera, and such data as can be procured by careful inquiry into any present situation. No rigid or fixed calculus of values is likely to prove adequate; man ever seeks new worlds to conquer. But the nature of reflective valuation and the fact that there is objective ground for value discrimination are not merely described but in a helpful degree explained when seen in their larger psychological, social, and physical rôle and setting. Valuation remains reflective, as it must, but it faces uncertainties

equipped with a perspective and other conceptual tools which have been and continue to be forged and tested in human experience.

Fifth and finally, it becomes clearer that the problem of the ultimate cosmic roots or status of value is an open one. Whether the universe is a universe, and whether it is deterministic or indeterministic and purposive or merely mechanistic, must now seem more uncertain than in almost any previous century. At no point are either religious or scientific dogmatisms intellectually tenable, certainly not in matters ultimate. Such dogmatisms are increasingly recessive, and the attitude which may best be taken is more apparent. We may hope for any further confirmation in these matters largely in the degree that values can be both envisaged and achieved (or approached) in social and individual situations. We may not properly pre-judge this larger cosmic question; we may not reasonably assume that values are "ultimately" man-made, time-bound, and relative; nor may we be sure that the status and fate of values is secure in an eternal, unchanging, absolute reality wherein all truth, goodness, and beauty repose untarnished by opinion and action and independent of human effort, or even that the nature of man and his world places in the cards an insatiable desire for growth or perfectionward striving. For to close the books in any such way is to prejudice and distort the very situation which is then used as data with which to appraise the nature of man and his world. But even we hard-headed (and often soft-hearted!) "naturalists" ought not to object to finding our world and human nature as capable of creative achievement as they may be. The matter can be put to the test, of course, not by inactivity whether born of puerile hypercritical pessimism or of soft gullible optimism, but by unfagging efforts at resourceful, intelligent experimentation.

It is possible that by failing to act upon the hypothesis that our world and we are capable of yet further advance, we but perpetuate conditions which now give plausibility to the theory that experimentation in human matters is either impossible or too dangerous. If the naturalist would be truly scientific, he dare not overlook the genuine possibilities in this hypothesis and the danger which lurks in an assumption that the real is fully revealed in the present actual. And if the idealist will look closely he can discern herein the means which may prove most effective in strengthening his own position: by treating man and his world as a creative process whose full possibilities are yet to be discovered through further creativity.

The dawn of the value viewpoint here discerned as implicit in a slowly accumulating trend of practice and theory may be expected to gain momentum as it becomes conscious of its own direction and traits. The conscious formulation of the theory is facilitated in the

degree that the viewpoint becomes dramatic through familiar use in personal and social affairs. The effects are thus reciprocal: the practice shapes the theory and the theory modifies the practice. What these consequences are and will be, as well as the central theme of the theory, have been formulated perhaps most explicitly by John Dewey in *The Quest for Certainty*.[4]

Three of the consequences may be noted briefly. First the dualisms which separate thought and action, tending to divide the sciences and other interests (such as art, religion, politics, economics, personal and social conduct) into isolated specialties, will be less sharp. All knowledge will be recognized as having potential human or "moral" import, and all conduct (even directing research and applying scientific findings) will be seen to have vital significance for human values. Manufacturing and finance, in fact the sciences and arts generally, will have become further humanized before the dawn of value theory will be for most people rosy fingered—or even discernible. Secondly, there will be increasing recognition that as much care must be taken in framing and testing ideas about values as is used in forming ideas about events viewed as events and about more purely technical processes. Third, a new unification will emerge in human interests. This unity within and among our various activities will be achieved through familiar use of a common methodology and through general recognition of the complex continuities (as well as the differences) which run through all phases of behavior and experience.

In the degree that the philosophic profession assists in such a clarification of theory as may now be slowly dawning, it probably makes no inconsequential contribution to present need. In Dewey's words: "The problem of restoring integration and cooperation between man's beliefs about the world in which he lives and his beliefs about the values and purposes that should direct his conduct is the deepest problem of modern life."[5] And in the degree that such a viewpoint as is herein discerned and briefly sketched becomes effective both in theory and practice, we shall have accomplished the solution of this problem along the lines foreseen by Dewey when he said: "Operational thinking needs to be applied to the judgment of values just as it has now finally been applied in conceptions of physical objects. Experimental empiricism in the field of ideas of good and bad is demanded to meet the conditions of the present situation."[6]

The view here suggested, however, is also consistent with most

[4] Ch. X.

[5] *Op. cit.*, p. 255. By permission of the author.

[6] *Ibid.*, p. 258. By permission of the author.

of the results of such keen and inclusive analyses of value and valuation as have been made by Dewitt H. Parker, R. B. Perry, W. M. Urban, and numerous others. What we may name the viewpoint and the practice is less important than the fact that the value theory will, if its development is to be similar to that which has occurred so conspicuously in respect to theory of knowledge, incorporate within itself the most important elements emphasized by both empiricism and rationalism, by both realism and subjectivism, by both naturalism and idealism. These elements will be saved not by a loose eclecticism, but because they are raised to a new vitality and significance as aspects organically integral to an experimental procedure which must be at once objective and cautious, conserving and contriving, courageous and humble—a procedure which can be most fully formulated and appreciated only as it is also employed and revised in all aspects of human affairs.

RAY LEPLEY.

BRADLEY POLYTECHNIC INSTITUTE.

LOGIC AND THE LAWS OF NATURE [1]

THE logician, in so far as he limits himself to the formal side of his subject, shares with the mathematician the advantages of choosing his own starting point and defining the rules of the game. There may be something in the nature of things or in the nature of minds that accounts for the choice of postulates, definitions, and primitive propositions, and mathematicians may dispute whether it is experience or intuition or mere whim that guides the choice, but the validity of the mathematician's art is judged solely on the ground of adherence to the rules. As a pure mathematician he is not touched by the criticism that what he says may not be about anything or may not be true of nature. Thus the price of his invulnerability is exclusion from the world of natural events. If mathematics finds application in science, well and good; if it fails of application, that is no discredit to pure mathematics.

Whatever may be true of nature, Euclidean space and Euclidean plane circles have certain defined properties. Euclid may have been mistaken in believing it to be self evident that the space of nature also has these properties but he was not mistaken in the deduction of propositions from the definitions and postulates with which he started. Nor can the modern mathematician admit any error in his demonstration that all Euclidean plane circles have a ratio of circumference to diameter of 3.14159 . . . to 1. If he does not feel it in-

[1] Read at the Annual Meeting of the Western Division of the American Philosophical Association, Galesburg, Illinois, April, 1937.

cumbent upon him to check this result by measurement it is not because he is sure measurement will bear him out (measurement could not in any case determine the ratio to the 10th or the 100th decimal place); it is because any geometrical figure which did not have that ratio would be rejected as not having been a true circle.

To take this stand is merely to say that propositions in mathematics comprise a deductive system whose postulates prescribe the conditions to which any case must conform if it is in the system.[2] Failure of a supposed circle to conform to the analytical implications of Euclidean circularity does not invalidate the Euclidean system; it merely shows that the case in question had mistakenly been taken for a Euclidean circle. There may be another deductive non-Euclidean system, with other postulates, whose implications in regard to circles are fulfilled by the case in hand; but again, this system does not stand or fall by the confirmation it receives from the particular cases to which it is applied. Such confirmation is merely evidence that the part of nature involved probably possesses the structure expressed in the postulates of the system. Hence the conclusions of a deductive system are irrefutable, but there is no guarantee that the properties of nature are those set forth in the assumptions of the system. That our mathematics does have a wide applicability to nature is due to the fact that previous acquaintance with nature guides the choice of postulates. Hence it is no accident that Euclid's definitions, postulates, and axioms should find exemplification in nature, even though there is no *a priori* necessity that nature should conform to the preferences of mathematicians. The logician, when charged with arriving at factually false conclusions, may, like the mathematician, take refuge in the position that there was nothing wrong with his logic, and that as formal logician he can not be held accountable for the truth of his premises. This is usually expressed by saying that deductive reasoning does not guarantee the truth of premises which make assertions about matters of fact.

Accordingly, it would seem that the scientist, whose aim it is to systematize the facts of nature, must forego the security enjoyed by the mathematician or the logician who stays within the closed circle of deduction. However much use the scientist may make of mathematics and logic in deriving the consequences of some hypothesis, he is not permitted to start with a set of postulates and then reject as external to his system, any facts which do not square with the postulates. The scientist is not likely to speak of postulates at all, but of hypotheses or theories, and if these conflict with fact it is the hy-

[2] An excellent exposition of this point is to be found in R. M. Eaton, *General Logic*, pp. 482 ff.

pothesis or theory that must be rejected or altered. This is the mark of an inductive system; the facts are the last court of appeal.

When making generalizations or formulating theories the scientist must keep his fingers crossed and be prepared to take it all back until the facts are all in. But the facts are never all in and there lies the problem of induction. Since there is no necessary connection between any existing state of affairs and any other, it is not possible to prove that certain characters or events must be associated with, or followed by, certain other ones. Even when experiment has shown, in a given case, that circumstances *A* are associated with *B*, it remains to be proved that wherever circumstances similar to *A* recur they must be accompanied by *B*. To attempt to prove this by citing the fact that experience has well justified reliance on the principle of "same cause, same effect" is, of course, to beg the question; induction can not be employed to defend induction. To this problem there is no solution if the criteria by which the circumstances *A* are identified do not involve *B*. Then we can but note the existence of *A* and hopefully trust that *B* will again be forthcoming.

In so far, however, as the occurrence of *B* is itself a factor in determining whether or not we are really dealing with a case of *A* identical with other instances of *A* which were found to be attended by *B*, it may be possible to establish a connection between *A* and *B* with all the certainty of a deductive conclusion. But this would be at the cost of reducing the connection between *A* and *B* to a tautology, for *A* would be *defined* in terms of its relationship to *B*. We shall try to show that the only general proposition about nature which is both certain and synthetic is the principle of induction itself.

Consider the generalization: all bodies have inertial mass, i.e., every body upon collision with another body changes the velocity of that body and itself undergoes a change of velocity. Assuming that one knows what a body is, this proposition could be confirmed by a large number of instances, thereby establishing its probability with the kind of evidence upon which all inductive generalizations rest. If, now, the question is raised of what constitutes an object a body, there may be some difficulty in deciding just what properties or marks are to be taken as the identifying features of a body. Consequently about any given case to be used as evidence for the generalization there will be some question whether it is a fact that this is a body. After considering various properties such as filling a volume, or persisting in time, or having color, as candidates for the essential character of a body, one may conclude that the definitive nature of a body must include inertial mass. Objects which neither retard nor deflect the thrust of a sword are ghosts, hallucinations, or dream

objects; they are not bodies. What started as a generalization now becomes true by definition and one may be assured that all bodies have inertial mass because anything which lacked mass could not be a body. With this our proposition has become a tautology; it is a resolution to use mass as a mark to classify objects as bodies.[3]

By similar reasoning, if one finds a duckling hatching from what was supposedly a hen's egg, the conclusion is not that hens' eggs sometimes hatch into ducklings. Rather the egg calls for reclassification. It is not to be defined independently of what comes out of it. Thus our uncertainty about the sort of egg we are dealing with enables us to be certain that hens' eggs hatch only into chicks. The truths arrived at in this way are not synthetic propositions. They merely state one of the necessary elements in the nature of anything claiming to be a body or a hen's egg. Such propositions are useful in the classification of objects but do not add to our information about nature.

Consider next the far-reaching law of the conservation of energy. There are many phenomena which appear to contradict this law. A ball thrown straight up into the air has, as it leaves the hand, a certain amount of energy of motion. (In the physicist's terms it is *kinetic* energy whose quantity is ½ the mass multiplied by the square of the velocity.) It loses this motion as it ascends and at the top of its flight there is an instant at which it is at rest. Its energy is therefore zero. The physicist, however, finds it useful to postulate that the energy in the whole of nature, or in any isolated part of nature, is constant. If he is to retain this law he may not say that energy has disappeared; he assigns to the ball an amount of "potential energy" equal to the lost kinetic energy. Potential energy is nothing but the ability of the ball, because of its raised position, to regain its kinetic energy upon falling back to the level from which it started.

When two bodies collide, the total of their kinetic and potential energy does not appear to be conserved. To maintain the postulate of the conservation of energy now requires that the apparently vanished energy be assigned to other phenomena which arise, namely, to the heat generated, and this may take the form either of increased temperature or emitted radiation. The physicist bent upon understanding all phenomena in mechanical terms will regard heat as molecular energy, and radiation as the energy of moving ether or corpuscles. But whatever his theory, it will be formulated in such a way that the postulate of the conservation of energy is retained. The discovery of energy emanations from radio-active substances leads to hypotheses about sub-atomic energy which is not newly

[3] Cf. Lewis, C. I., *Mind and the World Order*, Appendix A.

created but has been there as a latent source of supply. Similarly, a latent heat of fusion is attributed to crystals so that the energy manifested when they go into solution, or when they are fused, will not upset the conservation of energy postulate.

To be sure, this saving of a principal is not as arbitrary as the foregoing illustrations would make it appear and the hypotheses appealed to are not altogether *ad hoc*. Molecules, whose motions represent the kinetic equivalent of heat, figure in the explanation of numerous other phenomena as well. Furthermore, the scientist will point to the failure of all attempts to produce a perpetual motion machine capable of doing work (which would involve an unlimited output of energy) as inductive evidence for the law of the conservation of energy.

But at this point we may ask whether the scientist does not feel assured that no perpetual-motion machine can be made because he is antecedently certain of the conservation of energy. In other words, having found a certain amount of inductive evidence for it, does he not then set it up as a criterion by which to interpret further facts? Since the conservation-of-energy law is not to rest on the induction in which it may have originated, and since it is not self-evident, it must be an assumed postulate whose justification lies in the fact that by taking it as primary and interpreting the events of nature so that they will conform to it—if necessary, assigning potential energy to raised bodies and stretched springs and assigning to the atom of radioactive substances an inner structure capable of possessing and emitting energy—it is possible to systematize nature in such a way that what is found at one time and place will be an index to what is to be found at other times and places.

There is, however, this important observation to be made: the law of the conservation of energy is a formula for dealing with matters of fact and if the construction which had to be put upon the facts, in order that they should always exemplify the formula, were to become so cumbersome that it lost its usefulness in systematizing and predicting the course of nature, the postulate would be discarded. This is to say that, in the end, the fate of the law of the conservation of energy lies with the facts; it can not be taken as more than relatively primary and this distinguishes it from our other examples which, since they reduce to mere tautologies, are in no danger of being rejected as false.

With these illustrations in mind we return to the main issue. The question is whether there is any escape from the dilemma that either our knowledge, in order to be certain, must consist, like pure mathematics, of mere definitions and tautologies; or else, in order to possess the power of prediction enjoyed only by generalizations

applicable to matters of fact not yet experienced, our knowledge must give up the claim to certainty.

Any proposition which is to be as certain as those of a formal system of logic or mathematics and yet be synthetic—that is, assert something of matters of fact—must be so indispensable to the pragmatic process of finding in any given situation an index to other times or places, that no interpretation of fact may be allowed which contradicts that proposition. Even so useful a postulate as that of the conservation of energy may turn out in the last analysis to be a liability in the work of reducing the world to manageable order. It remains to inquire whether the principle of induction (a special case of which is expressed by the phrase "same cause, same effect") is such an indispensable postulate, taking precedence over any other generalization about fact.

No scientific account of an event or object, or of the connection between events or objects, is intended to apply to only a given case; it is intended to assert something of all cases of a certain sort. If, now, a question could be raised, not merely as to whether the given case had been correctly described to be of the sort A, but also as to whether every exactly similar case need have a similar outcome B, the scientist's task would be hopeless. His most accurate determinations could not be taken as a universal law. There must be some way of construing the world so that to every difference in outcome there corresponds some relevant difference in the circumstances.

Paradoxically enough, we are assured of the possibility of so construing the world because the world is never twice the same and because there are no isolated "hard" facts capable of presenting us with a decisive example of two identical cases of A, one of which issued in B, the other in B'. There is no ground for assuming that any total cross section of the universe is the same as any other total cross section—even on the questionable supposition that a description is possible of a state of the world that does not include some temporal as well as spatial thickness. If a scientist, seeing at a glance into every corner of the world, seemed to find that all of nature had returned to an earlier state, but then found that it failed to pass again through the earlier cycle, he would revise his judgment that he had really found the world twice in the same state. If necessary he would construct ingenious theories of sub-microscopic differences between the two states so that to different sequences there will correspond different antecedents.

The actual problem, however, does not have to do with what follows upon a total state of the world but with what follows in a more or less isolated part of the world. Laws of nature are statements of what is to be found in a certain region of space and time whenever

the same or another specified region has certain determinate characteristics and provided that changes in the rest of the universe do not affect the regions in question. Theoretically the scientist must admit that no two cases to which his law may be applied are exactly alike, that no laboratory experiment can be repeated in precisely the same way, and that every wave that strikes a distant shore may make *some* alteration in everything in the universe. But a part of nature that may reproduce an earlier occasion with any degree of exactness and events elsewhere may have all degrees of relevance to what eventuates here. The attempt to repeat an experiment often fails to give the same result, but instead of supposing that nature may have changed her ways the scientist concludes that the experimental conditions were not really the same or that something in the environment, which he had thought irrelevant, made a difference. Sometimes he is able to take into account something to which the difference may be attributed, as when he makes allowances for unavoidable friction, or temperature changes, or the gravitational pull of a passing planet. Thus, by successive approximations, he arrives at a law which asserts that *B would be* the result if the ideal situation *A* could be set up again. Evidently, so long as the result is used as a test of whether the conditions were the same, and the rest of the world irrelevant, the scientist will never be compelled to question his postulate that a certain set of isolated antecedents always brings the same consequents.

This is no solution to that part of Hume's problem in which he found himself unable to demonstrate that a given specific cause must have a certain specific effect. There is no *a priori* proof of any specific law. But the more serious part of Hume's problem resulted from his inability to show that, when experience had presented us with a certain sequence $A - B$, we may presume that all other cases of A will be succeeded by B. The only way to answer Hume on this point is to show that in practice we do not have clear-cut, indubitable cases of A and of B determinable independently of one another and of the rest of the world. Consequently we include in our tests for A and for B, whatever context or theoretical construction seems to be needed to preserve the lawfulness of nature. If we were required to give this up, the search for generalizations about our world would have to be abandoned.

Suppose a physicist is determining the heat of fusion of ice by measuring the change in temperature of a liter of water, caused by the melting of ten grams of ice in it. If he uses two samples and gets different results he is certain that in at least one of them he did not have pure ice, or pure water, or that his thermometer was not correctly calibrated for both samples, or that some circumstance of

the one sample differed from that of the other. His certainty on this point is a corollary of the postulate that similar causes always bring similar results. To question this postulate is to allow that even under identical circumstances there is no such thing as *the* heat of fusion of ice and each experiment would give information about only the single case.

The principle that certain events follow invariably upon certain other events is not, as Kant thought, a condition of any possible experience. The scientifically incurious may accept disorder as being in the nature of things or believe that natural routine is broken by miracles. Were there miracles, the scientist could not rest until he had invented gods to whom habits and dispositions could be ascribed which would reduce the miracles to laws of divine behavior.

But the scientist's goal of finding every event an instance of a law can never be reached. Some of the data required lie in the future and such novelty as the future may bring can not be formulated into laws until the data are in. Yet, whatever the difficulties of finding criteria to judge the probable validity of any particular induction, no experience can ever be a decisive proof that nature is not lawful.[4] The exigencies of life demand that experience should be significant of other experience, and if nature occasionally takes us by surprise, we must profit by that experience to reinterpret her ways so that she will not take us unawares again.

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BOOK REVIEWS

Spinoza. Band III. Aus den Tagen Spinozas. Geschehnisse, Gestalten, Gedankenwelt. II. Teil: Des neue Leben. Band IV. Aus den Tagen Spinozas. Geschehnisse, Gestalten, Gedankenwelt. III. Teil: Das Lebenswerk. STANISLAUS VON DUNIN BORKOWSKI, S.J. Münster i. W.: Aschendorffschen Verlagsbuchhandlung. 1935, 1936. 444 pp., 587 pp. 15.60 M., 20 M.

The first of the four volumes of Father Dunin Borkowski's monumental study appeared in 1910 under the title, *The Youth of Spinoza;* when the learned Jesuit scholar died on May 1, 1934, the second

[4] This conclusion is not invalidated by the much-discussed principle of indeterminacy in physics. The difficulty there is not that certain determinate values of A are in some cases the conditions of certain determinate values of B and in other cases the conditions of other values. Rather, the difficulty lies in the inability of the scientist to assign precise values to A, and until this is done it is meaningless to inquire whether A is the invariable condition of B. One must first be able to say precisely what A is (e.g., the position and velocity of an electron).

volume had been published, the third was on the press, and the fourth ready for publication. Even the space of several decades and the labor of a long lifetime seem short when viewed in terms of the erudition he has been able to crowd into those 2000 pages. Data and explications important to the study of the seventeenth century and its intellectual background, bibliographies, recondite information concerning men, movements, and places, brief histories of concept, problems, and methods, frequently carried far beyond the immediate scope of Spinoza's usage or his knowledge, make Dunin Borkowski's work indispensable in the study of Spinoza or of the seventeenth century.

Father Dunin Borkowski's historical method is directed to reconstructing, as means of elucidating Spinoza's philosophy, the historical, moral, and intellectual atmosphere in which he worked. The places and people among which he lived, the men he knew or might have known, the books he read or might have read, the problems he dealt with or might have considered preliminary to his work, are reconstructed with minute care. Usually one begins with the specific persons or things with which Spinoza had known connections: the persons with whom he corresponded or whom he mentioned in his letters or the books in his library; to these are added the persons or things that he might conceivably have known: the professors of philosophy in the neighboring University town, the well-known figures of the day, the religious or political movements of Holland, or the books in the nearby University library; finally, the history of questions and the bibliographies are sometimes pushed further to origins and backgrounds important for the understanding of the problem but which, the reader is warned, Spinoza could never have known. The effect of this meticulous accumulation is to create a rich and dense picture of the seventeenth century in which detail after detail of the thought of Spinoza (who like Aristotle in the Middle Ages appears as *the Philosopher* in the pages of Dunin Borkowski) takes on clarity and definition from associations unsuspected to the modern mind coming to Spinoza's pages without contemporary references.

Volumes III and IV are concerned with the mature period of Spinoza's work (1660–1677) following the completion of the *Short Treatise*. The problems of this period are considered in general in terms of five stages of development: (1) the formulation of a theory of truth as fundamental to the possibility of accurate knowledge, (2) the recognition of the necessity of understanding the problems of the Scholastic, Cartesian, and other intellectual groups, (3) the construction of a system in which the conception of eternal being is brought into relation with a conception of human life, freedom, and

happiness with a consequent organization of moral problems, (4) a resultant consideration of the problem of the freedom of philosophizing, and (5) an examination of the problem of scriptural interpretation. Volume III opens, after a vivid account of the country and people about Leyden, with a consideration of the first stage. As introduction to the examination of the *De Intellectus Emendatione* the works in Spinoza's library dealing with subjects there treated are analyzed (involving a much needed formulation of the influence of Stoic doctrines on Spinoza); the treatise itself is considered in terms of four groups of questions, those concerned with *idea* and *ideatum*, with *res fixae et aeternae*, with *notiones communes*, and with the rationalism of Spinoza. *The Principles of Descartes' Philosophy* is considered very briefly, but on the other hand the *Cogitata Metaphysica* is made the subject of a long and very enlightening commentary on the influence of Scholasticism and Cartesianism on Spinoza, in the course of which Freudenthal's notions are subjected to criticism and correction, the doctrines of two philosophers of Leyden, Arnold Geulincx and John de Raei are expounded, and the bearing of Niels Stensen's work upon that of Spinoza is set forth at length. The problem of the unity of being is broached by a short statement of the problem in the Renaissance followed by an examination of its discussion in popular philosophers, scientific philosophers, and free-thinkers in the seventeenth century. The volume closes with an admirable brief history of the discussion of the freedom of thought as it leads to Spinoza. Volume IV, opening with a consideration of the correspondence from 1660 to 1677, devotes some 270 pages to the *Tractatus Theologico-Politicus* and to the problems of textual and historical criticism. The history of these problems which Father Dunin Borkowski has prepared is a valuable contribution to scholarship in itself; his survey involves the examination of six kinds of treatises which have contributed to the development of historiography and text criticism: (1) theoretical treatises on criticism, historical method, and history itself, (2) the *artes criticae*, (3) introductions and notes to editions based on reëxamination of manuscripts, (4) critical treatises on individual authors, (5) writers of contemporary history, (6) treatises concerned with the paleography of documents as such. The final 130 pages of the last volume are devoted to problems connected with the *Ethics*. Throughout both volumes the notes are full of highly compressed information, lists of men and books and brief treatises on a vast variety of subjects.

Despite their similarity of purpose and their comparable solidity of achievement, the work of Father Dunin Borkowski has surprisingly little in common with that of another historian of philosophy who has recently brought great erudition and a conscious historical

method to bear on the interpretation of Spinoza. Wolfson's two volumes on the *Ethics* were published too late, apparently, to have come to the attention of Dunin Borkowski, but it is significant that the latter makes no reference even to the early chapters of Wolfson's work, which appeared in the *Chronicon Spinozanum,* although he quotes abundantly from that collection. Wolfson finds elucidation on all points in the Hebrew Medieval tradition with occasional excursions into the Latin Middle Ages; the Spinoza of Dunin Borkowski is wholly native to the seventeenth century and historical lines lead back only to Cartesian, Renaissance, and Latin Scholastic writers. Wolfson is concerned with the significance and sequence of the propositions and their demonstration and he finds both the words and the proofs in earlier writers; Dunin Borkowski's method is rather to assemble many names, titles, and generally relevant citations in order to sketch the background and indicate the nature of the problems envisaged. As a natural consequence the points which are clearest in the one, even limiting consideration to the *Ethics,* which is examined by both historians, are untouched in the other. The future student of Spinoza would do well consequently to supplement the one with the other. He should derive from them, as well as a vast composite fund of information invaluable for the understanding of the philosopher, an insight into the nature of the history of thought and an accompanying realization that when the scholar has succeeded in rendering a time or a doctrine intelligible, the philosophic problems which were the main concern of the philosophers studied remain, rendered accessible but otherwise untouched by labors of historical reconstruction. That two works which contribute so successfully to the understanding of a single philosopher by means of the historical background of his work should have so little in common involves no contradiction, for the work of discovering what a philosopher meant, though distinct from, is preliminary to recovering what he achieved, the one an historical, the other a philosophic undertaking.

R. McK.

Philosophical Fragments or A Fragment of Philosophy. SÖREN KIERKEGAARD. Translated from the Danish with Introduction and Notes by DAVID F. SWENSON. Princeton: Princeton University Press for American-Scandinavian Foundation, N. Y. 1936. xxx + 105 pp.

Here, at last, is an unmutilated, honest, and beautiful English translation of the great Danish philosopher who has had so much influence upon continental thinkers. This volume introduces his more profound positive insights and is prerequisite to his greatest

work, the "Concluding Unscientific Postscript to the Philosophical Fragments."

It is significant that Kierkegaard approaches the epistemological problem at the root of all philosophical activity ("How far does the Truth admit of being learned?") in terms of the religious problem at the root of traditional Christianity ("Is an historical point of departure possible for an eternal consciousness; how can such a point of departure have any other than a mere historical interest; is it possible to base an eternal happiness upon historical knowledge?"). The doctrine of recollection is the logical epistemology for an immanental rational view of the universe. However, Kierkegaard insists, ultimate reality is not commensurate with human rationality. Such a transcendent reality can be grasped only through revelation and faith, and in terms of paradox. By means of a style which is at once leisurely, compact, discursive, and direct, Kierkegaard is able to use this framework to attack the foundations and fruits of Hegelianism and all philosophical idealism, while expounding his own views under the symbolism of the Christian doctrines which are basic to them.

The translation is amazingly successful in capturing the literary style and freedom of the original while remaining faithful to terms and meanings. The translator's introduction is more adequate and faithful—in twenty-two pages—than the books that have appeared thus far on Kierkegaard in English. It must be read carefully before entering upon the text, for it performs the very necessary task of placing this work in the setting of the whole vast Platonic dialogue which Kierkegaard's writings compose.

BRYN MAWR, PENNSYLVANIA. HUGO W. THOMPSON.

Philosophie der Naturwissenschaften. MAX HARTMANN. Berlin: Julius Springer. 1937. 46 pp. 3.60 M.

In this book the German biologist makes an excellent survey of the theoretical background of modern natural sciences and interprets the philosophical meaning of the actual crisis concerning their fundamental principles. Based on the aprioristic philosophy of Kant he criticizes empirism and positivism. Our modern system of natural sciences is founded on certain *a priori* categories and metaphysical suppositions, the causal-analytic approach being the only possible method of use in the sciences. He emphasizes—in opposition to Reichenbach—that the development of modern physics, especially the theory of relativity, does not affect the apriorism of Kant. Only the conception of space and time as *"Formen der Anschauung"* has to be reduced and to be substituted by the interpretation of Neo-Kantianism, which regards space and time as forms

of our thinking. Of great interest is also his opinion regarding the recent discussion whether or not we have to give up causality as a result of the quantum theory. According to his opinion there is no question at all, since causality is principally a necessary category of scientific thinking and not an objective factor in reality. Here indeed Hartmann does not maintain the same clarity as in his first statement, for in some places causality is treated not only as a methodological, but also as an objective, factor within real processes. Finally it seems rather questionable to explain that all sciences have to use the same method and therefore to deny any principal difference between idiographic and nomothetic sciences. Thus he regards the descriptive disciplines only as sciences in an early stage of development.

GERHART SAENGER.

NEW YORK CITY.

L'expérience de l'espace dans la physique contemporaine. GASTON BACHELARD. Paris: Félix Alcan. 1937. 140 pp. 12 fr.

In a study which is a model of clarity M. Bachelard continues his metaphysical research into the fundamentals of ontology. A previous volume gave us his conception of time; this book gives us his conception of space. Basing his reasoning upon the uncertainty principle, he attempts to show how the space of macroscopic objects can be derived from that of the microscopic world. The result is a space which is discrete in a time which is equally discrete. That such a space-time does violence to our common sense is cheerfully admitted by M. Bachelard, who feels that common sense should continue to be corrected by science as it has frequently been in the past. The writer of this review is incompetent in matters of physical theory, but, either because of or in spite of that fact, he found the book unusually suggestive.

G. B.

Die ästhetische Wirklichkeit. HERMAN NOHL. Frankfurt am Main: Gerhard Schulte-Bulmke. 1935. 216 pp. 8.50 M.

Einführung in die Philosophie. HERMAN NOHL. Frankfurt am Main: Gerhard Schulte-Bulmke. 1935. 116 pp. 3.50 M.

Die ästhetische Wirklichkeit is an excellent introduction, at once historical and systematic, to the philosophy of art. Starting with the Renaissance, it analyses the major esthetic theories on the Continent and in England with notable clarity; it describes the contributions of the great critics and philosophers of art in their historical setting and appraises these contributions with shrewdness and impartiality; and it offers, in the course of this historical survey and

with the aid of several systematic chapters, an interpretation of art which is eclectic in the best sense, i.e., a consistent and illuminating synthesis of the positive contributions of the several positions examined. That the author's style is refreshingly clear and straightforward serves further to recommend the book to English readers.

The introductory chapter sets the stage for the subsequent inquiry. The chief problems with which modern estheticians have been concerned relate to the distinctive character of art and esthetic value, the creative unity of a work of art, and the nature and significance of style. Theorists have become aware of these problems and their import only gradually, and each problem can best be studied, the author believes, in the historical context in which it came to be most clearly formulated. Again, the esthetic experience may be approached in three ways, with primary emphasis upon the work of art in the several media, the creative process, and man's response to the finished product. Successive periods, schools, and individual theorists have tended to adopt now one, now another of these approaches at the expense of the other two. Where this is the case, the resultant doctrines can best be understood when studied in terms of the major esthetic preoccupation of their authors. The problem of artistic style, finally, can be solved only if the several organically related functions of art are clearly distinguished. The author enumerates four such functions: (1) expression (*Ansdruck*), (2) representation of reality (*Wirklichkeitsdarstellung*), (3) embellishment or consummation (*Verschönerung oder Vollendung*), and (4) symbolic meaning (*symbolische Bedeutung*). These functions too have received varying recognition in different periods, and, as a result, now this art and now that has achieved preëminence at different times, since each art is, by virtue of its medium, better adapted to the satisfaction of certain functions than of others. All art, moreover, reveals in its own way the *Weltanschauung* of its author and his historical period; the underlying "philosophy of life," then, as expressed in the work of art and more particularly in its artistic form, is the ultimate clue to style, regarded as an esthetic and as an historical phenomenon. These basic distinctions and doctrines are further developed in subsequent chapters (on *Stil und Weltanschauung, Metaphysik und Form,* and *Das ästhetische Lebensverhalten*) and determine the *rationale* of the author's historical investigations.

In the Renaissance the primary esthetic approach was "objective"; attention was focussed upon the work of art itself and its relation to the world of nature. The dominant arts were sculpture and painting, and the chief preoccupation of painters and sculptors was the esthetic mastery of nature through correct translation of

its forms into paint and stone. Beauty was defined in terms of symmetry and proportion, and was analysed almost in the spirit of scientific inquiry. The naturalistic rationalism of this approach constituted at once its strength (e.g., its recognition of the esthetic value of unity, order, clarity, etc.) and its weakness (e.g., its lack of historical perspective, its failure to interpret art as spiritually expressive, etc.).

The period of the Baroque produced no new esthetic but differed from the Renaissance in its shift of emphasis to man and the concept of sublimity, an emphasis which found its highest expression not in the plastic arts but in music. In the eighteenth century, and first in England, the objective approach was abandoned in favor of the subjective approach. What is it, men now asked, which constitutes esthetic taste? Beauty was recognized to be qualitatively unique and attempts were made to define it in terms of the associated impressions which, in aggregate, constitute our response to art and nature. On the Continent there was a similar interest in the *je ne sais quoi* of art and in *l'homme d'esprit, der Schöngeist.* This interest in the man of taste and the mystery of beauty was accompanied by a new interest in original genius and the creative power of the imagination which, though distinct from both reason and sensation, has its own laws and insights. This approach to art, via the creative process, became dominant during the *Sturm und Drang* period, and found expression in the writings of Winckelman, Goethe, and Herder. Now was appreciated for the first time the individuality not only of the single work of art but of the several historical periods, and this appreciation led to new and deeper insights into the nature of art and its successive styles.

Kant combined the subjective and genetic approaches in his analyses of taste and sublimity on the one hand, genius on the other. But despite moments of genuine profundity, he failed adequately to relate beauty and sublimity, genius and taste, to one another. Goethe and Schiller succeeded better in achieving the desired synthesis, Goethe along pantheistic lines, Schiller in terms of the Kantian dualism. This search for unity, between art and nature, the artist and the cosmos, the particular and the universal, also characterized the investigations of the metaphysicians, Schelling, the Schlegels, and Hegel. Their romantic pursuit of the Infinite as expressed in the finite was followed by the more sober and less metaphysical investigations of the Vishers, the Schopenhauerian esthetics of escape, and Nietzsche's distinction between Apollonian and Dionysian art, a distinction to which the author returns approvingly in his concluding chapter. Then came a group of thinkers who, still in reaction against the metaphysicians, approached art

"from below"; Semper, Fechner, and Taine are chosen as contrasting examples. The book closes with two excellent chapters (IX and XI) in which Dilthey's analysis of poetry is sympathetically reviewed and in which the author's own interpretation of art, very similar to that of Dilthey, is briefly but clearly indicated.

Were this book available in translation it would, I feel sure, be in instant demand by teachers of esthetics. It is, of course, too brief to be adequate to so complex a subject, and specific criticisms might easily be made. Even the more mature scholar, however, will find it rich in suggestion and fresh insights.

The *Einführung in die Philosophie,* by the same author, is a short introductory text equally clear in style and indicative of the same maturity of philosophical reflection. It discusses the philosophical attitude, naturalism, pragmatism, rationalistic metaphysics, the problem of knowledge and of experience (Kant), morality, art, and the relation of philosophy to life.

T. M. G.

Le transformisme et les lois de la biologie. GUSTAVE MERCIER. Paris: Félix Alcan. 1936. 88 pp. 12 fr.

This study is an attempt to establish certain fundamental "laws" of biology which will account for the evolution of species. These laws derive from a general law which runs, "The universe . . . is governed by a dynamism which we call 'ascending' to indicate the increasing complexity of its actualizations, whether they be stellar bodies, systems of stellar bodies, atoms or the systems of atoms which are molecules" (p. 69). The "ascent" is always towards "organization," "order"; the "dynamism" is individuated into quanta, particles, atoms, molecular systems, and living bodies (*Ib.*).

This fundamental law is a fair sample of M. Mercier's thinking, showing the degree of critical insight which pervades his study. He is aware of the problems arising from vagueness, but he solves them either by inventing technical terms which are simple Greek or Latin translations of his vague terms or by substituting for them commonsense expressions, e.g., "organization," whose clarity is more apparent than real.

His first special law shows these traits with peculiar force. It is called the "law of differentiated individuation." "In contra-distinction to what takes place in chemical species where samples of the same substance differ only in dimensions and mass, and where the atomic elements are interchangeable, all living beings, even when they belong to the same species, variety, or race, are specifically different from one another, and specifically different from their parents" (p. 70). M. Mercier sees the difficulty in the term "spe-

cifically." But he clarifies it as follows: It means "that a living being differs from all others by its inner constitution, chemical or protoplasmic, and by its structure which derives from the chromosomic particles or genes. By this token, every living being forms indeed a species with a single member, whereas mineral species exist with an indefinite number of members" (*Ib.*). It would seem as if a mind which had conceived this law would immediately ask what traits are relevant to biological classification and whether, in what concerns those traits, differentiation is greater or less than in chemistry. The early chemists found so high a degree of similarity in matter that they had only four elements—just as the early zoologists classified crocodiles among the insects. But these have been increasingly individuated, until to-day we have not only the ninety odd elements but also isotopes of many of them. And if the statistical treatment of molecular dynamics means anything for philosophy, it means that even the so-called ultimate particles of matter must be studied in large groups because individually they are as capricious as human beings.

M. Mercier is thus an interesting writer, but his work ought to begin where it ends. Were he more aware of what has been done in recent years in the philosophy of science, his book would read less like something written by a contemporary of Le Dantec.

G. B.

Christian Philosophy and the Social Sciences. Proceedings of the American Catholic Philosophical Association. Volume XII. Twelfth Annual Meeting, Chicago, Illinois, December 29 and 30, 1936. C. A. Hart, editor. Washington, D. C. Office of the Secretary of the Association, Catholic University of America. 1937. 201 pp.

Though the general theme for this meeting was the relation between Christian philosophy and the social sciences, the most interesting discussions were only indirectly related to this subject; in fact, two emphases were made, neither of which brings philosophy very close to the social sciences. One, begun by John J. Toohey in his Presidential address and continued in the radio discussion, asserted the need for the "common sense" of the man in the street as a test for philosophy's sanity; the other, contained in the various discussions of epistemological problems, revealed that the doctrine of causality in the *physical* sciences is of primary philosophical interest today. Perhaps the most polemical subject raised was the question of the Scholastic attitude toward experimental and physiological psychology.

The discussion on social philosophy hinged largely on what the

Christian alternative is to economic and political regimentation; some, especially Willis D. Nutting of Notre Dame, came out boldly (I imagine) in defense of the individual, whereas others defended spiritual regimentation. Of particular interest and timeliness was the symposium on "Was there, must there be, and can there be a Christian philosophy?" James Kelley's survey of the history of the problem is very informative. The expositions and criticisms of Blondel's and Gilson's positions on this question brought out clearly that this is still an open and an important problem. The Catholic reasons against "Christian philosophy" are well summarized by Harry McNeill:

> Strictly speaking, there can be no "Christian philosophy." There can be Christian philosophers, who are better philosophers by reason of their Christian faith; but what they elaborate under this Christian influence is not a philosophy which is Christian, but a philosophy which is true." [P. 45.]

The attempt by Ernest Kilger to identify neo-positivism with nominalism, and nominalism with the denial that the sensible world is intelligible, was not very successful and was vigorously debated. Attention should be called, finally, to an informative historical symposium on Abelard.

H. W. S.

OTHER NEW BOOKS AND JOURNALS

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Grierson, Herbert J. C.: Milton & Wordsworth. Poets and Prophets. A Study of their Reactions to Political Events. New York: Macmillan Company. 1937. x + 185 pp. $2.50.

Dreano, Maturin: La pensée religieuse de Montaigne. Paris: Gabriel Beauchesne et ses Fils. 1936. 501 pp. 55 fr.

Favilli, Mario: Formazione e costituzione della personalità. Estratto dalla *Rivista Pedagogica,* Anno XXIX, Fasc. V; Anno XXX, Fasc. II. Milano: Società Anonima Editrice Dante Alighieri. 1937. 47 pp.

Hedenius, Ingemar: Sensationalism and Theology in Berkeley's

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THE PERSONALIST. Vol. 18, No. 3. Mr. Dewey's Faith without Religion: *Wilbur Long.* Jesting Huxley—Waiting for an Answer: *W. S. Ament.* Technology and the Human Soul: *Arthur Liebert.* Free-Will in the Drama: *M. S. Evans.* Santayana's Last Puritan Again: *J. W. Buckham.* "Logic, Living and Dead": *H. Gomperz.*

ZEITSCHRIFT FÜR DEUTSCHE KULTURPHILOSOPHIE. Band 3, Heft 3. Die Persönlichkeit de Philosophen: *Hermann Glockner.* Nicolai Hartmanns Lehre vom objektivierten und objektiven Geist: *Karl Groos.* Geist und Bewusstsein: *Julius Binder.*

BLÄTTER FÜR DEUTSCHE PHILOSOPHIE. Band 11, Heft 1. Bemerkungen über das Versprechen: *Hans Lipps.* Die Seele im Gebiete des Geistes: *Béla Freiherrn von Brandenstein.* Zur Systematik der Allgemeinbegriffe: *Hans Wetter.* Berichte—Heinrich Rickert: *Bruno Bauch.* Zur Forschung um Albert den Deutschen: *Jakob Barion.* Das philosophische Grundproblem in Kants Nachlasswerk: *Gerhard Lehmann.* Zur Ethik der Gegenwart (anlässlich des Erscheinens von Bruno Bauchs "Grundzügen der Ethik"): *Erich Keller.* Bericht über englische Zeitschriftenaufsätze: *Friedrich Blaschke.*

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ZEITSCHRIFT FÜR SOZIALFORSCHUNG. Jahrgang VI, Heft 1. Der neueste Angriff auf die Metaphysik: *Max Horkheimer.* Über den affirmativen Charakter der Kultur: *Herbert Marcuse.* Zum Gefühl der Ohnmacht: *Erich Fromm.* Some Remarks on the Typological Procedures in Social Research: *P. F. Lazarsfeld.* Inventory of the Standard of Living: *Otto Neurath.* Gestural Behavior and Social Setting: *David Efron* and *John P. Foley, Jr.* Littérature récente sur le corporatisme: *Raymond Polin.*

NOTES AND NEWS

We print below the preliminary announcement of the Thirty-Seventh Annual Meeting of the Eastern Division of the American Philosophical Association:

"The 1937 meeting of the American Philosophical Association, Eastern Division, will be held at Princeton University, Princeton, New Jersey, from Tuesday afternoon to Thursday afternoon, December 28th to 30th.

"The meeting this year will be unusual in that, in accordance with the vote of the executive committee, the last session on Thursday afternoon will be held in conjunction with the Catholic Philosophical Association in New York City (Hotel Roosevelt). A joint program is in process of arrangement. In order to provide more time for discussion it was jointly agreed to limit the number of prepared papers to one for each association. The speaker selected by the Catholic Association is Professor Louis J. A. Mercier of Harvard. Professor W. H. Sheldon of Yale has agreed to be the representative of our Division.

"At Princeton two sessions will be devoted to the following subjects: 'The Æsthetic Object' and 'The Nature of the Causal Relation in the Light of Recent Physics.' Professor Albert Einstein has kindly consented to participate in the discussions of the latter session. While there will be some specially invited speakers for these sessions, the program committee is reserving space on the program for papers submitted to the committee by members interested in these special topics. Two further sessions will be devoted entirely to unsolicited papers contributed by members on any philosophic problems in which they are interested.

"Arrangements with THE JOURNAL OF PHILOSOPHY for the publication of abstracts of papers to be read at the meeting require that such abstracts (not more than 300 words in length) be in the hands of the Secretary by November 1st. The program committee will be greatly aided in its work if a complete draft of the paper to be read is submitted with the abstract. The limit of 20 minutes in reading time for papers presented at the meeting will be strictly enforced.

"The complete program including information as to arrangements for the accommodation of those attending the meeting will be issued early in December."

CORNELIUS KRUSÉ, *Secretary.*

WESLEYAN UNIVERSITY,
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